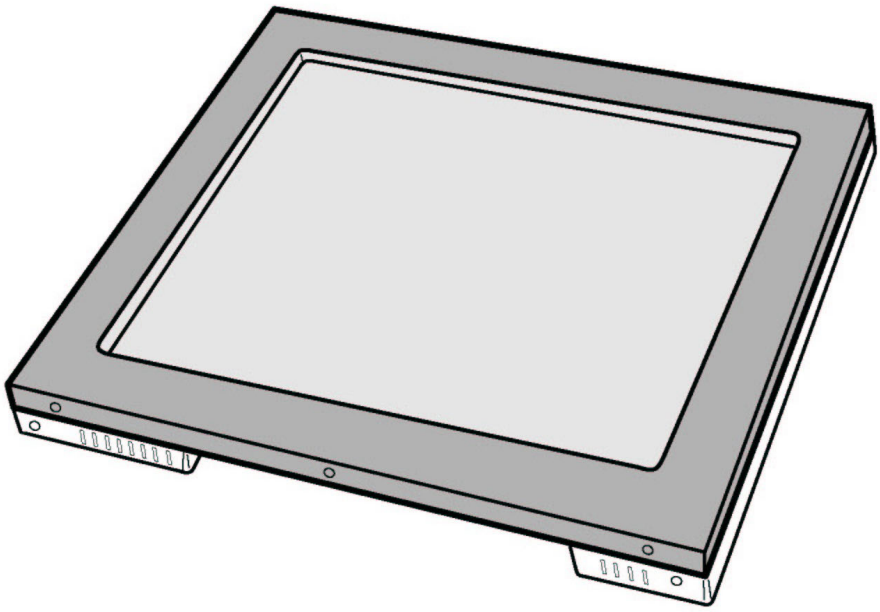
SERVICE MANUAL

LMU-TK18AG3 (Without Touch Panel)
LMU-TK18AG3TC (With Touch Panel)
(GENERAL)

INDUSTRIAL MONITOR

PRODUCT CODE No.	
LMU-TK18AG3	1 938 102 98
LMU-TK18AG3TC	1 938 102 97



REFERENCE NO.SM 920023 PRODUCT CODE NO.193810298
REFERENCE NO.SM 920024 PRODUCT CODE NO.193810297

INDEX

Refer to the separate volume User’ s Manual and CD-ROM
That included for instruction.

PRECAUTIONS

Placement precautions

- Avoid placing the unit in humid or dusty places, or where it will be exposed to excessive heat (direct sunlight, heaters, etc.)
- Do not step on or set anything on the AC power cord. DAMAGE TO THE AC POWER CORD IS A SAFETY RISK AND CAN CAUSE A FIRE.
- Install the unit only on a stable and smooth surface.
- Do not connect the unit to the same AC outlet with appliances that generate large amounts of interference (such as heaters with thermostats, appliances with motors, etc.). It is best to use a completely separate electrical outlet.
- Keep the unit away from water or small objects. If they accidentally enters the unit, unplug the AC power cord immediately. DO NOT PLUG IN THE UNIT AGAIN.
- Never cover the rear ventilators with cloth or something.

Handling precautions

- Avoid bending, kinking or damaging the AC power cord.
- Never insert or remove the power cord with wet hands. Also, be sure to hold cord by the plug when removing it from the outlet.
- Do not remove any parts that are held in place with screws. (The unit does not contain any user-serviceable items.)
- Maintain standard room temperature (5°C to 35°C, or 41°F to 95°F) during use. Do not subject the unit to shock or vibration. Do not move the unit while it is in use.
- A rapid increase in room temperature in cool weather can cause condensation to form inside the unit. If this occurs, wait at least 15 minutes after turning the unit on before attempting to operate it.

1. MAIN SPECIFICATION

1-1 LMU-TK18AG3

LCD

Liquid Crystal Panel	TFT
Display Size	18.1"
Pixel Configuration	1,280 x 1,024 (SXGA)
Pixel Pitch	0.2805 x 0.2805 mm
Brightness	240 cd/m^2
Response Time	29 ms
Contrast	300 : 1 typ.
Angle of Visibility	Up 85, Down 85, Right 85, Left 85 degrees (contrast ratio of less than 10)

Video

Vertical signal	56 - 75 Hz
Horizontal signal	31.4 - 80.0 kHz
Video Signal	Analog: RGB 75ohm 0.7Vp-p Digital: DVI Standard Version 1.0
No. of Colors	16.77 million
OSD Language	English, German, French, Spanish
Plug & Play	VESA ，DDC2B
Power Management	VESA DPMS

Physical

Dimensions	446 (W) x 368 (H) x 58.5 (D) mm	
Weight	5.2 kg	
Operating Conditions	Operating Temperature:	5°C to 35°C
	Humidity:	30% to 85% RH (no condensation)
Power Supply/AC Adaptor	Model Name:	SEB100P3-15.6
	Input:	100-240VAC 15.6VDC, 5A
Power Consumption	62 W (5 W in Energy Saving mode)	

Note : To improve this LCD monitor's performance level, its specifications and appearance are subject to change without notice.

1-2 LMU-TK18AG3TC

LCD

Liquid Crystal Panel	TFT
Display Size	18.1"
Pixel Configuration	1,280 x 1,024 (SXGA)
Pixel Pitch	0.2805 x 0.2805 mm
Brightness	240 cd/m^2
Response Time	29 ms
Contrast	300 : 1 typ.
Angle of Visibility	Up 85, Down 85, Right 85, Left 85 degrees (contrast ratio of less than 10)

Video

Vertical signal	56 - 75 Hz
Horizontal signal	31.4 - 80.0 kHz
Video Signal	Analog: RGB 75ohm 0.7Vp-p Digital: DVI Standard Version 1.0
No. of Colors	16.77 million
OSD Language	English, German, French, Spanish
Plug & Play	VESA , DDC2B
Power Management	VESA DPMS

Touch Screen

Type	Capacitive
Electrical Resolution	10bit (1,024 x 1,024)
Communication	Bi-directional asynchronous RS-232C serial communication

Physical

Dimensions	446 (W) x 368 (H) x 65 (D) mm	
Weight	6.5 kg	
Operating Conditions	Operating Temperature:	5°C to 35°C
	Humidity:	30% to 85% RH (no condensation)
Power Supply/AC Adaptor	Model Name:	SEB100P3-15.6
	Input:	100-240VAC 15.6VDC, 5A
Power Consumption	64 W (5 W in Energy Saving mode)	

Note : To improve this LCD monitor's performance level, its specifications and appearance are subject to change without notice.

2. TROUBLESHOOTING

Check the following for troubles of LCD monitor.

No.	Symptom	Check Points	Treatments	Class
1	No Picture with Back light OFF			
	1	Is the Power "ON" to a LCD Monitor ?	Check AC outlet, AC cord, DC Jack and Power switch for a LCD monitor	A
	2	Is the Power "ON" to a Computer ?	Check the Power for a Computer	A
	3	Is a signal cable connected securely ?	Check the connection of a signal cable	A
	4	Is a computer standing by ?	Be out of standing by condition, by operating to a computer	A
	5	Disconnected a signal cable ? or Bent a terminal pin ?	Ensure the connection of a signal cable	B
	6	Is an AC Adapter defective?	Replace an AC Adapter with the new one	C
	7	Is the wire harness between main PCB and LCD module secured firmly ?	Check the connection of wire harness	C
	8	Is the wire harness between LCD module and DC/DC Conv. secured firmly ?	Check the connection of wire harness	C
	9	Is the wire harness between DC IN PCB and DC/DC Conv. PCB secured firmly ?	Check the connection of wire harness	C
	10	Is the wire harness between main PCB and DC IN PCB secured firmly ?	Check the connection of wire harness	C
	11	Is the LCD module defective ?	Replace a LCD module with the new one	C
	12	Is the Inverter block on LCD module defective ?	Replace a LCD module with the new one	C
	13	Is the DC/DC Conv. PCB defective ?	Replace a DC/DC Conv. PCB with the new one	C
	14	Is the displaycircuit on main PCB defective ?	Replace the main PCB with the new one	C
	15	Is the Power Supply circuit on main PCB defective ?	Replace the main PCB with the new one	C
2	No Picture with Back light ON			
	1	Is a screen saver programming running ?	Press any key or touch the mouse, to end the screen saver program	A
	2	Is the computer's signal timing not agreeable to the LCD's specification ?	Adjust the computer's signal timing, if possible	B
	3	Is the Image Processing circuit on main PCB defective ?	Replace the main PCB with the new one	C
3	White/Grey on whole screen(Nothing on screen)			
	1	Is the wire harness between main PCB and LCD module secured firmly ?	Ensure the connection of wire harness	C
	2	Is the LCD module defective ?	Replace a LCD module with the new one	C
	3	Is the Image Processing block circuit on main PCB defective ?	Replace the main PCB with the new one	C

A It is possible to treated by end-user
B It might be possible to treat by end-user in some case.
C It must be treated by Professional Technical Staff

No.	Symptom	Check Points	Treatments	Class
6	Dark screen			
	1	Is the wire harness between inverter and a LCD module secured firmly ?	Ensure the connection of a wire harness	C
	2	Is the wire harness between one of inverters and main PCB secured firmly ?	Ensure the connection of a wire harness	C
	3	Is the display circuit on main PCB defective ?	Replace the main PCB with the new one	C
7	Screen's display range is incorrect			
	1	Is the adjustment for screen performed correctly ?	Adjust the screen correctly	A
	2	Is the output level on image from a computer not agreeable to LCD's specification ?	Check the specification of a computer	B
	3	Is the size of screen set correctly ?	Set the size of screen again(refer to User's Manual for computer)	A
8	Screen is distorted			
	1	Is the adjustment for screen performed correctly ?	Adjust the screen correctly	A
	2	Is a signal cable connected securely ?	Check the connection of a signal cable	A
	3	Is a signal cable extended ?	Don't extend a signal cable	A
	4	Is the output level on image from a computer not agreeable to LCD's specification ?	Check the specification of a computer	B
	5	Is the Image Processing circuit on main PCB defective ?	Replace the main PCB with the new one	C
9	Part of colors (R/G/B) is not displayed. Black line appears in vertically			
	1	Is a signal cable connected securely ?	Check the connection of a signal cable	A
	2	Is the connection between main PCB and a LCD module securely ?	Ensure the connector of wire harness	C
	3	Is the Image Processing circuit on main PCB defective ?	Replace the main PCB with the new one	C

A It is possible to treated by end-user
B It might be possible to treat by end-user in some case.
C It must be treated by Professional Technical Staff

3.MAINTENANCE

3-1 LMU-TK18AG3

Disassembling the major components

(1) Cabinet

1.Unscrew to secure the cabinet(10-position)
2.Pull the cabinet upward to remove it

(2) LCD Panel

1.Unscrew to secure the LCD Panel(4-position)
2.Pull the LCD Panel and pull one connector out from DC-DC PCB
3.Disconnect three cables from the Main PCB

(3) Main PCB

1.Pull the RGB signal cable out
2.Unscrew to secure the Main PCB(6-position)
3.Disconnect the cables on the Main PCB(4-position)
/ Two connectors from the LCD Panel
/ One connector from the Inverter PCB on LCD
/ One connector from the DC-IN PCB
4.Pull the cover of shield
5.Unscrew to secure the bracket for RGB and DVI,Remote Controller connector (6-position)

(4) DC-DC PCB

1.Unscrew to secure the DC-DC PCB(4-position)
2.Disconnect the cable from the Inverter PCB
3.Disconnect the cable from the DC-IN PCB

(5) DC-IN PCB

1.Unscrew to secure the DC-IN PCB(2-position)
2.Disconnect two cable,one from power switch,one from DC-DC PCB and the Main PCB

(6) Power Switch

1.Remove the power switch,while pressing the hook of the power switch

3-2 LMU-TK18AG3TC

Disassembling the major components

(1) Cabinet

1.Unscrew to secure the cabinet(10-position)
2.Pull the cabinet upward to remove it

(2) LCD Panel and Touch Panel

1.Lift up,reverse the Touch Parel on one side and put it
2.Unscrew to secure the LCD Panel(4-position)
3.Pull the LCD Panel up and pull one connector out from DC-DC PCB
4.Disconnect three cables from the Main PCB
5.Unscrew to secure the earth terminal(1-position)
6.Disconnect the cable on the Touch Controller PCB

(3) Main PCB

1.Pull the RGB signal cable out
2.Unscrew to secure the Main PCB(6-position)
3.Disconnect the cables on the Main PCB(5-position)
/ Two connectors from the LCD Panel
/ One connector from the Inverter PCB on LCD
/ One connector from the DC-IN PCB
/ One connector from the Touch Controller PCB
4.Pull the cover of shield
5.Unscrew to secure the bracket for RGB and DVI,Remote Controller connector (6-position)

(4) DC-DC PCB

1.Unscrew to secure the DC-DC PCB(4-position)
2.Disconnect the cable from the Inverter PCB
3.Disconnect the cable from the DC-IN PCB

(5) Touch Controller unit

1.Unscrew to secure the Touch Controller PCB(2-position)
2.Disconnect the serial cable

(6) Serial Cable(Connector and Cable with bracket)

1.Unscrew to secure the beacket for serial cable(2-position)
2.Unscrew to secure the clamp(1-position)

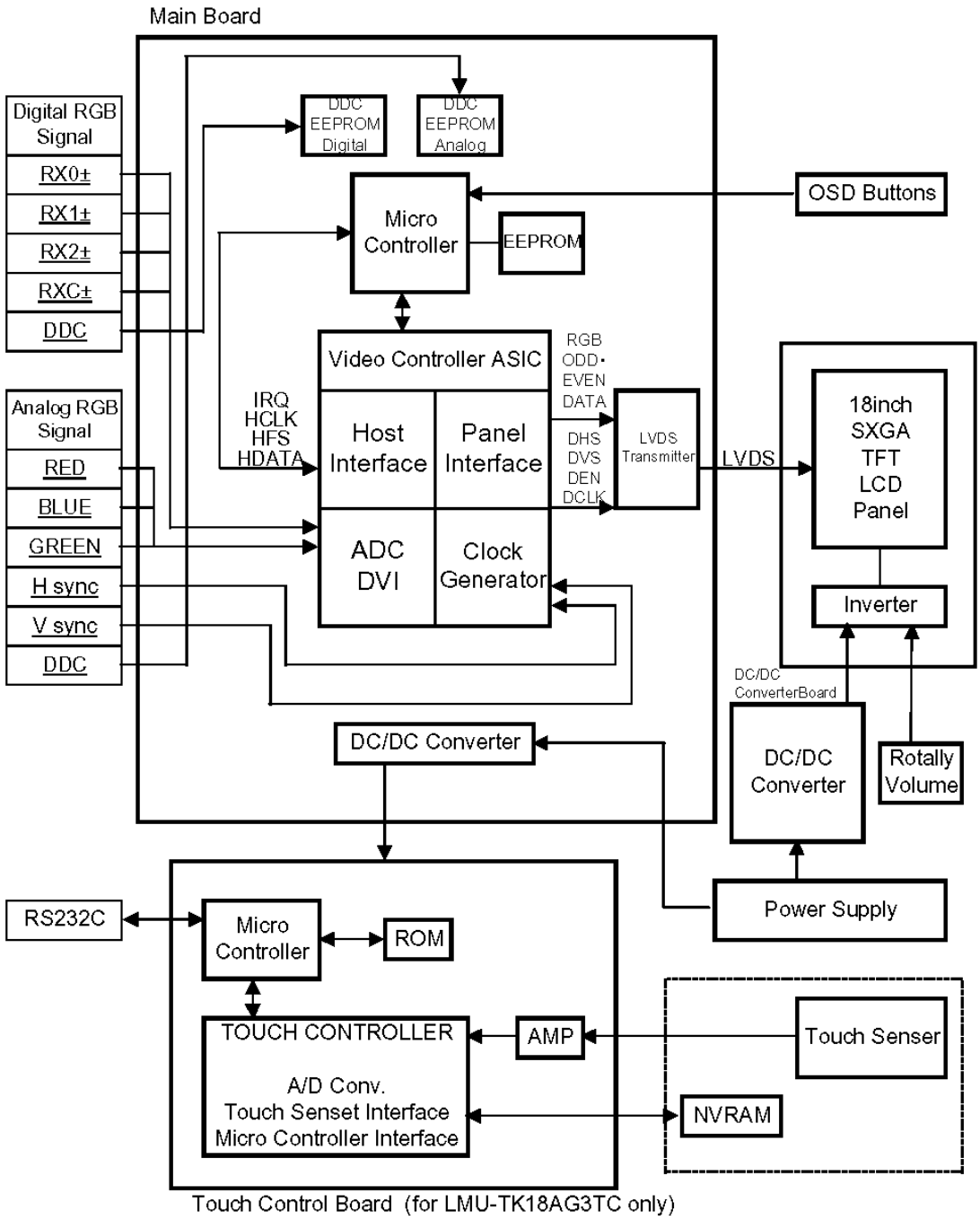
(7) DC-IN PCB

1.Unscrew to secure the DC-IN PCB(2-position)
2.Disconnect two cables,one from power switch,one from DC-DC PCB and the Main PCB

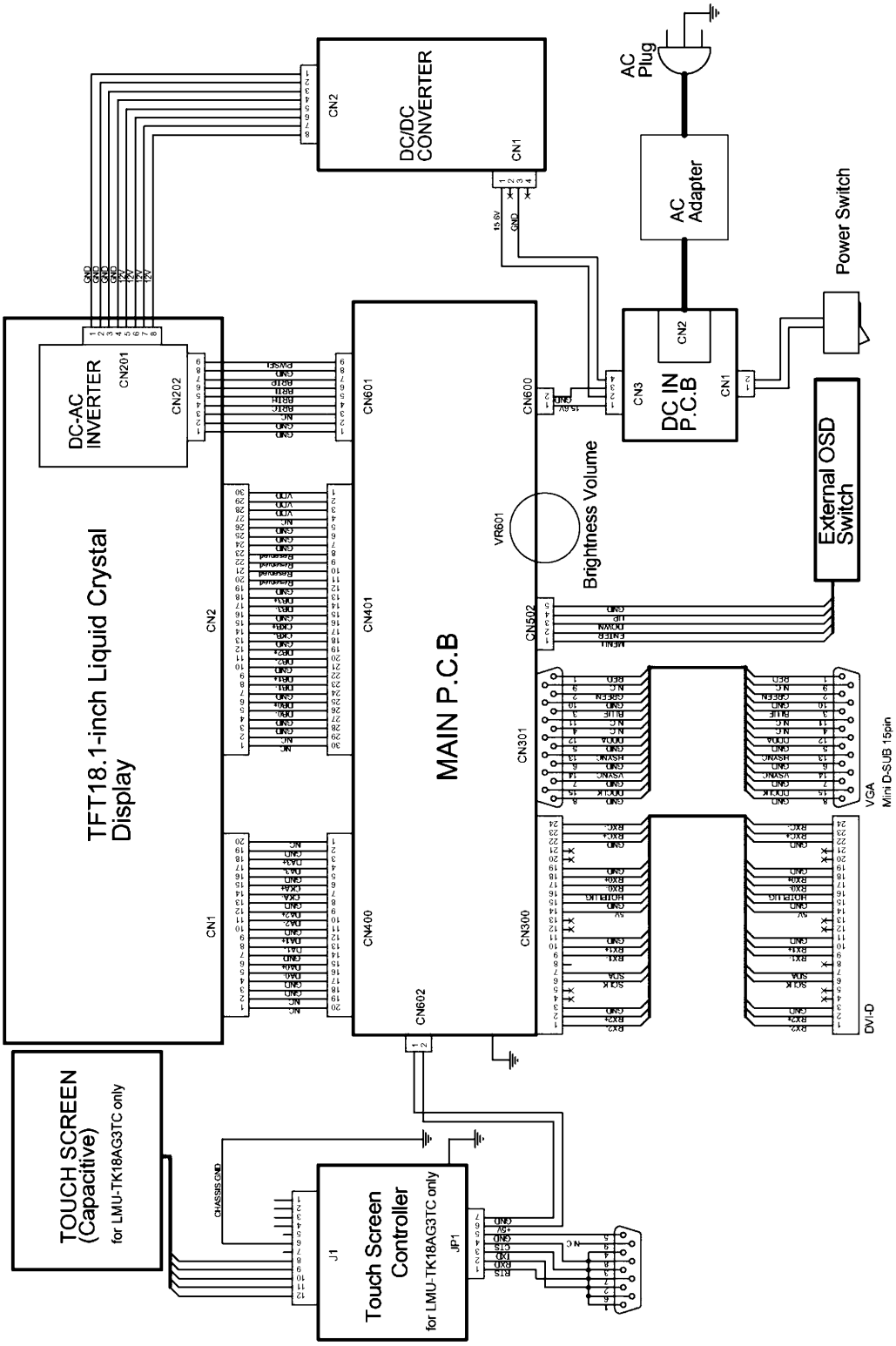
(8) Power Switch

1.Remove the power switch,while pressing the hook of the power switch

4.BLOCK DIAGRAM



5.CONNECTION DIAGRAM



6.TABLE OF SIGNAL NAME

MAIN Board

Symbol	Signal Name	Location	Notes
RED	RED/Analog Video Signal	CN301-1	
GREEN	GREEN/Analog Video Signal	CN301-2	
BLUE	BLUE/Analog Video Signal	CN301-3	
DDDA	DDC Data	CN301-12	
HSYNC	Horizontal Synchronizing Signal	CN301-13	
VSYNC	Vertical Synchronizing Signal	CN301-14	
DDCK	DDC Data Clock	CN301-15	
RX0-	TMDS link Channel 0	CN300-17	
RX0+	TMDS link Channel 0	CN300-18	
RX1-	TMDS link Channel 1	CN300-9	
RX1+	TMDS link Channel 1	CN300-10	
RX2-	TMDS link Channel 2	CN300-1	
RX2+	TMDS link Channel 2	CN300-2	
RXC-	TMDS Clock	CN300-24	
RXC+	TMDS Clock	CN300-23	
SDA	DDC DATA	CN300-7	
SCLK	DDC CLK	CN300-6	
DA0-	Pixel Data Odd	CN400-16	LVDS Level
DA0+	Pixel Data Odd	CN400-15	LVDS Level
DA1-	Pixel Data Odd	CN400-13	LVDS Level
DA1+	Pixel Data Odd	CN400-12	LVDS Level
DA2-	Pixel Data Odd	CN400-10	LVDS Level
DA2+	Pixel Data Odd	CN400-9	LVDS Level
DA3-	Pixel Data Odd	CN400-4	LVDS Level
DA3+	Pixel Data Odd	CN400-3	LVDS Level
CKA-	Pixel CLK Odd	CN400-7	LVDS Level
CKA+	Pixel CLK Odd	CN400-6	LVDS Level
DB0-	Pixel Data Even	CN401-26	LVDS Level
DB0+	Pixel Data Even	CN401-25	LVDS Level
DB1-	Pixel Data Even	CN401-23	LVDS Level
DB1+	Pixel Data Even	CN401-22	LVDS Level
DB2-	Pixel Data Even	CN401-20	LVDS Level
DB2+	Pixel Data Even	CN401-19	LVDS Level
DB3-	Pixel Data Even	CN401-14	LVDS Level
DB3+	Pixel Data Even	CN401-13	LVDS Level
CKB-	Pixel CLK Even	CN401-17	LVDS Level
CKB+	Pixel CLK Even	CN401-16	LVDS Level
BRTC	Backlight ON/OFF	CN601-4	ON:High OFF:LOW
BRTH	Brightness Control Signal	CN601-5	
BRTL	Brightness Control Signal	CN601-6	
BRTP	PWM Brightness Control Signal	CN601-7	
PWSEL	PWM Select Signal	CN601-9	
MENU	OSD MENU Key	CN502-1	
ENTER	OSD ENTER Key	CN502-2	
DOWN	OSD DOWN Key	CN502-3	
UP	OSD UP Key	CN502-4	

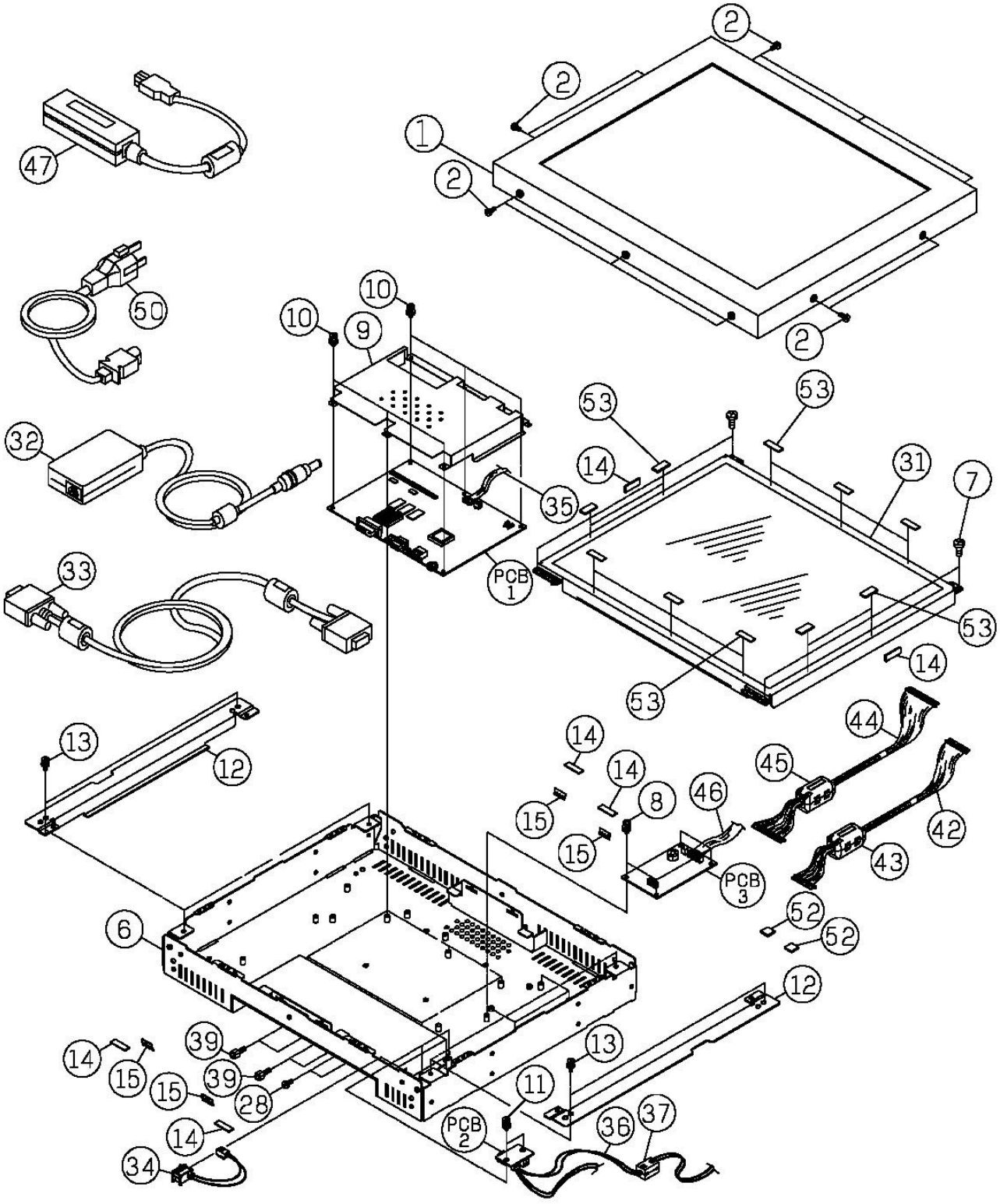
Touch Controller Board

(For LMU-TK18AG3TC only)

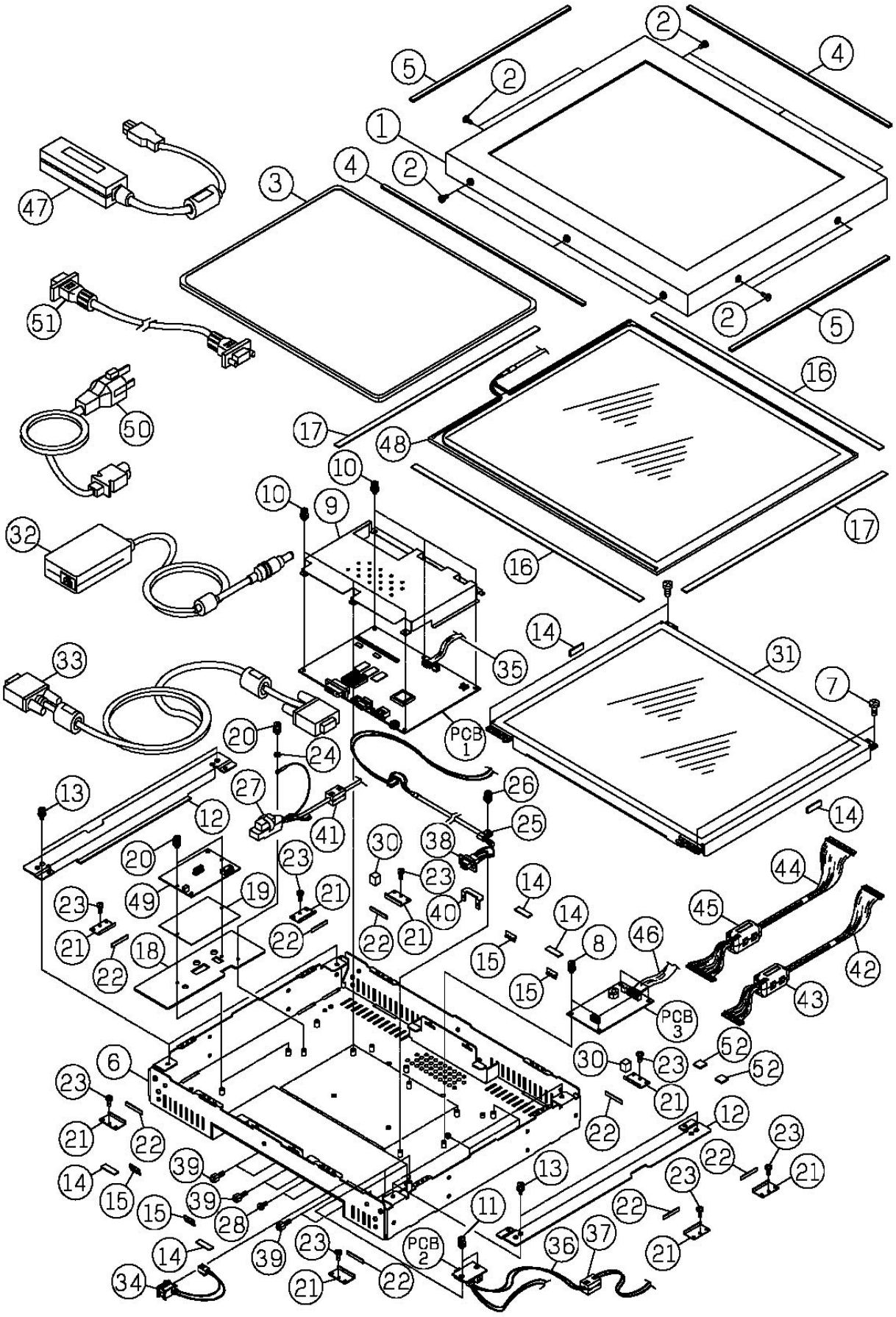
Symbol	Signal Name	Location	Notes
RTS	Request To Send	JP1-1	
RXD	Receive Data	JP1-2	
TXD	Transmit Data	JP1-3	
CTS	Clear To Send	JP1-4	
UR	Upper Right Corner	J1-9	
LR	Lower Right Corner	J1-10	
UL	Upper Left Corner	J1-11	
LL	Lower Left Corner	J1-12	

7.EXPLODED VIEW

7-1 LMU-TK18AG3



7-2 LMU-TK18AG3TC



8.PARTS LIST

⚠ CAUTION

Parts marked as ⚠ Are very important to secure safety.
In case of replacement, it is required to use designted parts for safety.

8-1 LUM-TK18AG3

REF No	⚠	PART No.	DESCRIPTION	Q'ty	NOTES
	OUTER				
		661 043 3757	INNER CARTON	1	
		632 758 4209	LABEL, BAR CODE	1	
	INDIVIDUAL				
		661 004 2409	PAD, TOP	1	
		632 892 5001	ACCESSORY CASE	1	
		632 892 5018	PAD, ACCESSORY	1	
		661 006 5934	PAD, CONER UPPER	4	
		661 006 5941	PAD, CONER LOWER	4	
		632 878 8637	POLYETHYLENE BAG, 550X700	1	FOR LCD MONITOR
		632 809 9450	POLY COVER, 120X320	1	FOR CONTROL BOX
		632 607 4824	POLYETHYLENE BAG, L180X270	1	FOR MANUAL
		632 567 2588	POLYETHYLENE BAG, 200X300	1	FOR CABLE
	ACCESSORY				
		661 043 5218	INSTRUCTION MANUAL, ENGLIS	1	
	CABINET1				
1		661 005 8653	TOP LID	1	
2		441 027 2401	SCR S-TPG BIN 3X5	10	
	CHASSIS				
6		661 042 3024	CHASSIS ASSY, BOTTOM	1	
7		411 002 9500	SCR PAN 4X10	4	
8		411 047 0104	SCR PAN+SW+W 3X8	4	
9		661 044 4272	SHIELD, MAIN	1	
10		411 047 0104	SCR PAN+SW+W 3X8	6	
11		411 047 0104	SCR PAN+SW+W 3X8	2	
12		661 042 3581	BRACKET, LCD	2	
13		411 046 1003	SCR PAN+SW 4X6	4	
14		661 002 5082	GASKET	6	
15		661 004 8456	PLATE SPRING, EMI	4	
28		411 030 5703	SCR BIN 2X4	2	

53		661 004 2386	GASKET, 7 - 1 - 25	10	
	CHASSIS ELC				
31		661 043 5966	DISPLAY MODULE	1	
32	⚠	661 027 9935	AC ADAPTOR	1	
33		661 008 0487	RGB CABLE, 1.8M	1	
34		661 047 5351	SEESAW SWITCH ASSY	1	
35		661 046 9121	WIRE HANESS, 9P - 205MM	1	
36		661 044 6559	WIRE HANESS	1	
37		632 891 4005	CORE	1	
39		661 001 2570	SPECIAL SCREW	6	
42		661 044 2599	WIRE HARNESS, 20P	1	
43		632 641 1926	CORE	1	
44		661 044 2629	WIRE HARNESS,30P	1	
45		632 641 1926	CORE	1	
46		661 044 2605	WIRE HARNESS,8P	1	
47		661 001 3164	REMOTE CONTROLLER ASS'Y	1	
50		632 860 5569	AC CORD	1	
52		661 030 3913	INSULATOE, T2	2	
	PC BOARD 1				
PCB 1		661 048 4407	PCB - ML ASSY, MAIN	1	
	PC BOARD 2				
PCB 2		661 012 7090	PCB - W ASSY, DC - IN	1	
	PC BOARD 3				
PCB 3		661 012 7120	PCB - W ASSY, DC / DC	1	

⚠ CAUTION

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In case of replacement, it is required to use designted parts for safety.

8-2 LUM-TK18AG3TC

REF No	⚠	PART No.	DESCRIPTION	Q'ty	NOTES
	OUTER				
		661 043 3757	INNER CARTON	1	
		632 758 4209	LABEL, BAR CODE	1	
	INDIVIDUAL				
		661 004 2409	PAD, TOP	1	
		632 892 5001	ACCESSORY CASE	1	
		632 892 5018	PAD, ACCESSORY	1	
		661 006 5934	PAD, CONER UPPER	4	
		661 006 5941	PAD, CONER LOWER	4	
		632 878 8637	POLYETHYLENE BAG, 550X700	1	FOR LCD MONITOR
		632 603 0998	POLYETHYLENE BAG, 130X500	1	FOR AC CORD
		632 809 9450	POLY COVER, 120X320	1	FOR CONTROL BOX
		632 607 4824	POLYETHYLENE BAG, L180X270	1	FOR MANUAL
		632 567 2588	POLYETHYLENE BAG, 200X300	1	FOR RGB CABLE
		632 607 4824	POLYETHYLENE BAG, L180x270	1	FOR SERIAL CABLE
	ACCESSORY				
		661 043 5218	INSTRUCTION MANUAL, ENGLIS	1	
		661 042 6162	DISK	1	
		661 044 7389	LEAFLET, SOFTWARE, JPN/ENGL	1	
	CABINET1				
1		661 006 5972	TOP LID	1	
2		441 027 2401	SCR S-TPG BIN 3X5	10	
3		632 829 5032	CUSHION, WATERPROOF	1	
4		632 892 5049	CUSHION, TOP LID L	2	
5		632 892 5056	CUSHION, TOP LID S	2	
	CHASSIS				
6		661 042 3024	CHASSIS ASSY, BOTTOM	1	
7		411 002 9500	SCR PAN 4X10	4	
8		411 047 0104	SCR PAN+SW+W 3X8	4	
9		661 044 4272	SHIELD, MAIN	1	

10		411 047 0104	SCR PAN+SW+W 3X8	6	
11		411 047 0104	SCR PAN+SW+W 3X8	2	
12		661 042 3581	BRACKET, LCD	2	
13		411 046 1003	SCR PAN+SW 4X6	4	
14		661 002 5082	GASKET	6	
15		661 004 8456	PLATE SPRING, EMI	4	
16		632 892 5117	CUSHION, TOUCH PANEL L	2	
17		632 892 5148	CUSHION, TOUCH PANEL S	2	
18		632 872 9760	HEAT SINK, CONTROL	1	
19		632 868 7367	INSULATOR	1	
20		411 047 0104	SCR PAN+SW+W 3X8	3	
21		661 006 6009	BRACKET, TOUCH PANEL	8	
22		632 892 5216	CUSHION, BARCKET	8	
23		411 001 1802	SCR S-TPG BIN 3X5	8	
24		411 008 0402	WASHER OUT TW 3	1	
25		632 886 5789	CLAMP	1	
26		411 047 0104	SCR PAN+SW+W 3X8	1	
27		661 042 8005	CUSHION,CONTROL	1	
28		411 030 5703	SCR BIN 2X4	2	
30		661 044 9208	CUSHION, GASKET	2	
CHASSIS ELC					
31		661 043 5966	DISPLAY MODULE	1	
32	⚠	661 027 9935	AC ADAPTOR	1	
33		661 008 0487	RGB CABLE, 1.8M	1	
34		661 047 5351	SEESAW SWITCH ASSY	1	
35		661 046 9121	WIRE HANESS, 9P - 205MM	1	
36		661 044 6559	WIRE HANESS	1	
37		632 891 4005	CORE	1	
38		661 044 1851	CABLE, RS232C	1	
39		661 001 2570	SPECIAL SCREW	6	
40		632 889 5083	BRACKET,SERIAL	1	
41	OR	632 837 2713	CORE	1	
41	OR	632 891 4005	CORE	1	
42		661 044 2599	WIRE HARNESS, 20P	1	
43		632 641 1926	CORE	1	
44		661 044 2629	WIRE HARNESS,30P	1	

45		632 641 1926	CORE	1	
46		661 044 2605	WIRE HARNESS,8P	1	
47		661 001 3164	REMOTE CONTROLLER ASS'Y	1	
48		632 893 2412	TOUCH SENSOR, 18.1	1	
49		661 043 5683	CONTROL UNIT	1	
50	⚠	632 860 5569	AC CORD	1	
51		632 866 8397	SERIAL CABLE, 1.8M	1	
52		661 030 3913	INSULATOE, T2	2	
	PC BOARD 1				
PCB 1		661 047 5368	PCB - ML ASSY, MAIN	1	
	PC BOARD 2				
PCB 2		661 012 7090	PCB - W ASSY, DC- IN	1	
	PC BOARD 3				
PCB 3		661 012 7120	PCB - W ASSY, DC / DC	1	

9.APPENDIX

Version of Firmware

The Version of Firmware is displayed on screen.

Turn the Power Switch to 'OFF'. While pressing of the [ENTER] button, turn the Power Switch to 'ON'.